I claim:

1. A cDNA encoding for human receptor protein H4-1BB.

2. The cDNA of claim 1 having a nucleotide sequence as shown in Figure 2.

3. The cDNA of claim 1, identified as pH4-1BB deposited at the Agricultural Research Service Culture Collection with the accession number NRRL B21131.

4. The cDNA of claim 2 and fragments and derivatives thereof, wherein said fragments and derivatives can be used as a probe to isolate DNA sequences encoding for proteins similar to the receptor protein encoded by said cDNA.

5. The receptor protein H4-1BB produced by

a) inserting the cDNA of H4-1BB into an appropriate expression vector,

b) transfecting said expression vector into an appropriate transfection host,

c) growing said transfected hosts in appropriate culture media and

d) purifying the receptor protein from said culture media.

6. A protein having the amino acid sequence shown in Figure 2.

7. The protein of claim 6 and fragments and derivatives thereof, wherein said fragments and derivatives:

a) can be used as a probe to identify ligands to receptor protein H4-1BB;

b) can be used to stimulate proliferation B-cell's expressing H4-1BB ligands; or

c) can be used to block H4-1BB ligand binding.

8. A monoclonal antibody against H4-1BB which specifically recognizes receptor protein H4-1BB.

9. A hybridoma capable of producing a monoclonal antibody against H4-1BB which specifically recognizes receptor protein H4-1BB.

10. The method of using the monoclonal antibody of claim 8 to enhance T-cell proliferation comprising the step of treating T-cells that have expressed receptor protein H4-1BB with said monoclonal antibody.

11. The method of claim 12 further comprising the step of conducting said treatment in the presence of protein tyrosinase kinase.

12. The method of using the monoclonal antibody of claim 8 to enhance T-cell activation comprising the step of treating T-cells that have expressed receptor protein H4-1BB with said monoclonal antibody.

13. The method of claim 12 further comprising the step of conducting said treatment in the presence of protein tyrosinase kinase.

14. A fusion protein for detecting cell membrane ligands to human receptor protein H4-1BB, comprising:

a) at least a portion of said receptor protein H4-1BB corresponding to the extracellular portion of said receptor protein H4-1BB such that said portion of said receptor protein H4-1BB binds to said cell membrane ligands; and

b) a detection protein bound to said portion of said receptor protein H4-1BB such that ligand binding can be detected by relative activity assays for said detection protein.

15. The fusion protein of claim 14 wherein said detection protein is alkaline phosphatase.

16. A method of detecting cell membrane ligands to human receptor protein H4-1BB, comprising:

a) providing a fusion protein including:

1) at least a portion of said receptor protein H4-1BB corresponding to the extracellular portion of said receptor protein H4-1BB such that said portion of said receptor protein H4-1BB binds to said cell membrane ligands, and

2) a detection protein bound to said portion of said receptor protein H4-1BB such that ligand binding can be detected by relative activity assays for said detection protein;

b) placing said fusion protein in the presence of a cell suspected to express said receptor protein H4-1BB;

c) washing said cell of any fusion protein not bound to said cell membrane ligands;

d) placing said washed cells in the presence of a substrate for said detection protein and measuring the relative activity of said detection protein.

17. The method of claim 16 wherein said detection protein is alkaline phosphatase.

18. A method of inducing B-cell proliferation comprising the step of treating B-cells that have expressed a ligand to human receptor protein H4-1BB with cells that have expressed receptor protein H4-1BB.